

REMARKS

The issues outstanding in the Office Action mailed October 29, 2007, are the requirement for restriction and the rejections under 35 U.S.C. 112 and 103. Reconsideration of these issues, in view of the following discussion, is respectfully requested.

Requirement for Restriction

Applicants traversal of the restriction requirement is maintained. Appropriate action will be taken at such time as the application is allowed, or proceeds to appeal.

Rejection Under 35 U.S.C. 112

The Examiner is thanked for the careful read of the claims. Various typographical and grammatical changes have been made to the claims, in order to render the language consistent. It is submitted that these amendments do not change the scope of the claims either literally, or for purposes of the doctrine of equivalents. Withdrawal of the rejection under 35 U.S.C. 112 is respectfully requested.

Rejections Under 35 U.S.C. 103

Claims 9, 10, 17 and 20 have been rejected under 35 U.S.C. 103 over various references as set forth at page 5 of the Office Action. These claims have been canceled for business reasons, in order to expedite prosecution. Thus, this rejection is moot, and withdrawal thereof is respectfully requested.

Claims 1-10 and 15-20 have been rejected under 35 U.S.C. 103 over each of Chau '495 or Anstett '263 or Anstett '427. Reconsideration of each of these rejections is respectfully requested.

Chau '495

Chau, commonly assigned with the present application, discloses a process for preparing a supported zeolite membrane employing a non-isothermal program comprising at least three steps in succession: a first constant temperature stage at a temperature of 50 to 300°C, followed

by cooling to less than 50°C, a second constant temperature stage conducted at 50 to 300°C, and a final constant temperature stage at 80 to 220°C, preferably. See the paragraph at the bottom of column 2, and the first paragraph at column 3. The patent teaches that this process is advantageous over prior art multi-step synthesis, which encourage the production of thick layers of zeolites. See, for example, column 1, lines 46-60. The Chau process of a non-isothermal programmed three step synthesis thus distinguishes the prior art of isothermal (fixed temperature) single and multi-step syntheses. One of ordinary skill in the art would thus not retreat to an isothermal single step process, and moreover would not be motivated to attempt to “optimize” the features of such an isothermal process, in view of the patent’s teaching of an improvement through the use of a non-isothermal process. Thus, one of ordinary skill in the art would not be directed to an isothermal process in which the molar ratio of water to silica is as stated in the present claims.

In regard to the molar ratio of water, it is noted that the Office Action argues that the ranges of the molar ratio water to silica “overlap” with those of the reference. See page 4 of the Office Action. In fact, no such ranges whatsoever are disclosed in Chau. Moreover, inasmuch as the reference does not teach that this ratio is result-effective, and does not disclose ratios in the examples, it is submitted that such range as presently claimed is in no way suggested by the disclosure, much less as a modification to an isothermal process, which is not the invention of the reference. Withdrawal of this rejection is accordingly respectfully requested.

Anstett ‘263

Anstett ‘263, also commonly assigned with the present application, discloses a process for the production of a supported zeolite membrane. As with Chau, the patent discloses a multi-stage (non-isothermal) crystallization process. See, for example, column 4, lines 27-32. See also example 1. Also similarly to Chau, the patent discloses no indication that the ratio of water to silica is result-effective. Indeed, it is thus respectfully submitted that, also similarly to Chau, the patent fails to suggest a process in which isothermal technique is used and the ratio of water to silica is selected in the manner of the claim. Moreover, as with Chau, the patent teaches a process in which the zeolite layer is localized near the surface of the support, i.e., having a continuous thin layer of zeolite “principally localized at the surface of a porous support.” See the sentence

bridging columns 1 and 2 of the patent. By contrast, this does not disclose or suggest a construction such is that presently claimed wherein a continuous composite layer is obtained by obstructing the empty voids of the substrate by zeolite crystals in a manner such that all of the zeolite phase is in the pores of the substrate, as in added claims 21 and 22. (These claims are supported in the specification, e.g., at page 4, the first paragraph, and page 8, the second paragraph). See column 1, lines 53-55. As a result, claims 21 and 22 are further not suggested by the reference. Moreover, the thickness of patentees' layer is 1-100 μ m, see Column 5, lines 33-36, and thus does not suggest claim 23. Withdrawal of this rejection is also respectfully requested.

Anstett '427

With respect to the rejection over Anstett '427, similarly assigned with the present application, this patent discloses a process for the production of a composite membrane with a continuous zeolite layer and, similarly to the above discussed references, does not suggest the result-effective nature of the water to silica ratio, nor the use of a single, hydrothermal treatment. See, for example, example 1. With respect to the water/silica ratio, the single example of the patent corresponds to a ratio of 19.2, well below the claimed range of 27-35. Moreover, the patent specifies that the zeolite phase is "exclusively on the external surface of the support", see column 4, lines 19-21 since the support "includes pores with a diameter which is too small to contain zeolite crystals (see column 2, lines 9-12 and 24-26). Thus, the patent also does not suggest claims 21 and 22.

Accordingly, withdrawal of the entirety of this rejection is respectfully requested.

Conclusion

As discussed above, none of the cited references teach or suggest a process in which crystallization is conducted in a single isothermal treatment with the specified water/silica ratio. Moreover, the references fail to suggest a process producing a zeolite layer wherein most or all of the zeolite is localized in the pores of the substrate, as in claims 21 and 22, and the '263 patent fails to teach a thickness as in claim 23.

It is thus respectfully submitted that the application is in condition for allowance, and passage to issue is respectfully requested. However, should the Examiner have any questions or

comments, he is cordially invited to telephone the undersigned at the number below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

/Harry B. Shubin/

Harry B. Shubin, Reg. No. 32,004
Attorney/Agent for Applicant(s)

MILLEN, WHITE, ZELANO
& BRANIGAN, P.C.
Arlington Courthouse Plaza 1, Suite 1400
2200 Clarendon Boulevard
Arlington, Virginia 22201
Telephone: (703) 243-6333
Facsimile: (703) 243-6410

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